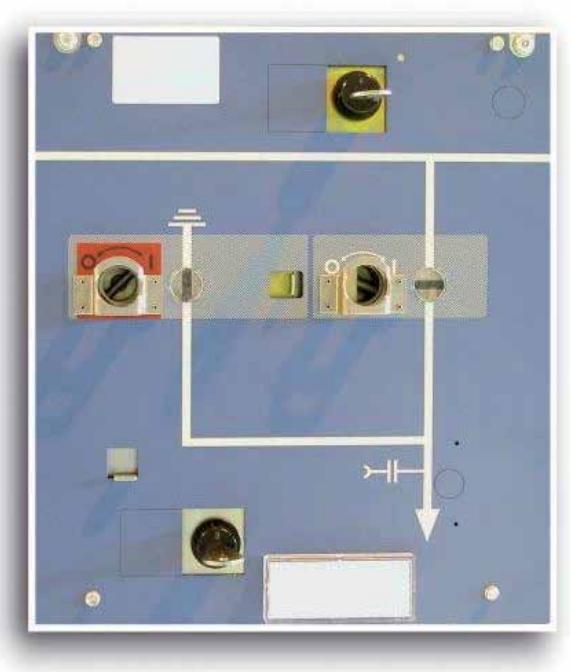
Medium Voltage Distribution

FBX

Mechanical key-type interlocking Assembly - Operation Instructions



Schneider Electric

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Introduction

Operations and maintenance may only be carried out by personnel who have received suitable authorisation for the operations and manoeuvres they are responsible for performing.

If this is not the case, please refer to our Service Unit or Training Centre.

All locking-out operations must be performed according to the "General Safety Instructions booklet for Electrical Applications" UTE C 18 510 (or its equivalent outside FRANCE).

Our Service Unit: our specialists, and suitably adapted services...

- Guarantee extension contracts in relation to the selling of new equipment.
- Supervision of HVA switchgear installations.
- Technical advice, diagnoses of the facilities, expertise.
- Maintenance contracts adapted to operational constraints.
- Systematic or conditional preventive maintenance.
- Corrective maintenance in case of partial or complete failure.
- Supply of spare parts.
- Overhauling of equipment and requalification of installations in order to benefit from new technologies and extend the life of your switchgear by limited investments.

Contact the Schneider Electric Service Unit for diagnoses and advice:
Working hours

☎ 33 (0)3 85 29 35 00 — 7 days per week/ 24 hours per day
📠 33 (0)3 85 29 36 30
or 33 (0)3 85 29 36 43 — Free phone No: 0 800 40 27 62

Overview

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Eco-design concept and revalorization of the materials used

The design and life cycle of the equipment and switchgear manufactured by Schneider Electric take environmental requirements into account (see page 10).
The design and manufacture of our packaging are both in conformity with the French government decree N° 98-638 of 20 July 1998, concerning the account that is taken of environmental requirements.

Responsibilities

Our devices are quality controlled and tested at the factory in accordance with the standards and the regulations currently in force.
Apparatus efficiency and apparatus life depend on the compliance with the installation, commissioning and operation instructions described in this user manual.
Non respect of these instructions is likely to invalidate any guarantee.
Local requirements especially about safety and which are in accordance with the indications given in this document, must be observed.
Schneider Electric declines any responsibility for the consequences:

- due to the non respect of the recommendations in this manual which make reference to the international regulations in force,
- due to the non respect of the instructions by the suppliers of cables and connection accessories during installation and fitting operations,
- of any possible aggressive climatic conditions (humidity, pollution, etc.) acting in the immediate environment of the materials that are neither suitably adapted nor protected for these effects.

This user manual does not list the locking-out procedures that must be applied. The interventions described are carried out on de-energized equipment (in the course of being installed) or locked out (non operational).

Particular instructions for operations and interventions on energized equipment

When commissioning and operating the equipment under normal conditions, the General safety instructions for electrical applications must be respected, (protective gloves, insulating stool, etc.), in addition to standard operating instructions.
All manipulations must be completed once started.
The durations (for completing the operations mentioned) given in the maintenance tables are purely an indication and depend on on-site conditions.

Other technical notices to be consulted

■ AMTNoT131	FBX (IS)	Installation - Commissioning
■ AMTNoT132	FBX(IS)	Operations - Maintenance
■ AMTNoT146	FBX (C13100)	Operations - Maintenance

Symbols & conventions

Code for a product recommended and marketed by Schneider-Electric

Tightening torque value Example**:** 1.6 **daN.m**

Mark corresponding to a key

CAUTION! Remain vigilant!
Precautions to be taken in order to avoid accidents or injury

FORBIDDEN! Do not do it!
Compliance with this indication is compulsory, non compliance with this stipulation may damage the equipment.

IINFORMATION - ADVICE
Your attention is drawn to a specific point or operation

Overview (contd.)

Tools (not supplied) required for the operations described in this user manual

Spanners: 7 ; 10 ; 13 ; 16 ; 26 mm

40 R.16 open-ended spanner

Ratchet handle + 2 extensions + universal joint + socket sizes 10 and 13 mm

Torque wrench + socket sizes 16, 26

Allen key for hexagonal screw size 3, 4

Flat headed screwdriver

Hammer + Pin punch

File

Torx 2.5 screwdriver

Reamer

Tightening torque values for standard assemblies (nut + bolt)

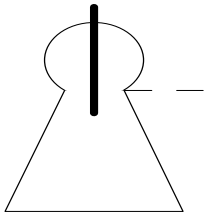
Threaded fasteners without grease: assembly with ungreased washers.

Threaded fasteners with grease: mounted with the washer greased.

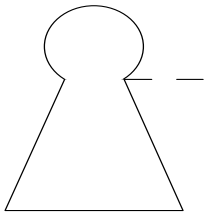
Use grease referenced:

Diameter	Zinc plated steel fasteners without grease (daN.m)		Stainless steel fasteners with grease (daN.m)
	Class 6.8	Class 8.8	A2-70
M 6	0.7	0.9	0.7
M 8	1.6	2.1	1.6
M 10	3.2	4.3	3.2
M 12	5	6.6	5
M 14	8.7	11.6	8.7
M 16	13.4	17.9	13.4
M 20	26.2	35	26.2

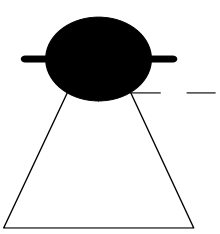
Symbols representing the actual position of the keys



- Key free - fitted.



- Key absent.



- Key captive.

Interlocking by locks

Interlocking using key-locks is a necessary requirement to: Guarantee certain operational functions,

- have the switchgear controlled by a line isolator or earthing switch,
- block access.

This manual deals with the two types of key-lock-type locking:

- locking a function, Operational interlocking

Operations and exploitation instructions

The information given in this manual is required for the elaboration of operating instructions and use of the equipment.
These procedures are specific to each individual installation and are produced by the customer.
The instructions for operational use must be displayed on the Functional units concerned.

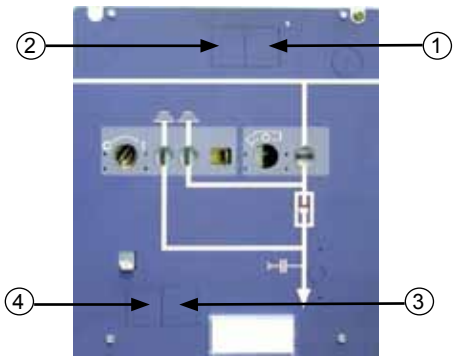
Changes or modification to installations

Any changes or modifications to the installations must trigger an update of the padlock interlock orders and the associated documents.

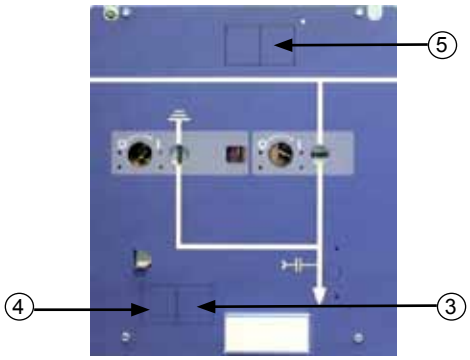
A general interlock plan must be systematically drawn up and updated as and when the installation is changed.

Locations of key-locks on the control panel

Function C



Functions T1 and T1c



Key

1 Lock load-break switch "open"
2 Additional lock Load-break switch "Open"
3 Key-lock - Earthing switch “Open”
4 Key-lock - Earthing switch “Closed”
5 Lock load-break switch "Open"

Installation of key-type interlocks on site

The installation of key-type interlocks requires:

- Purchase of the components and elements required,
- The use of suitable tools, (See page 6),
- Fitting instructions (see page15 & 19).

"Operating" interlocks

Role and applications

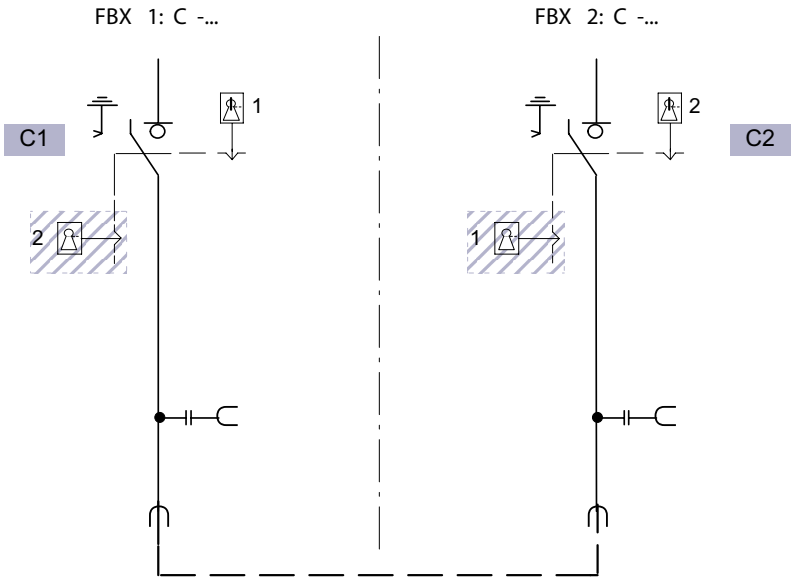
Operational interlocks are used to control the sequences of operational manoeuvres and lockout operations under normal service and safety conditions.

Interlocking the 'ring' between two Functional Units

Conditions the closing of the earthing switch on a Functional Unit in relation to the opening either of a load-break switch or the line isolator on the second Functional Unit.
Only applies to C functions (see page 8).
There is no 'ring' interlock between the 2 T2 functions.

Use of 'ring' interlock between 2 C functions

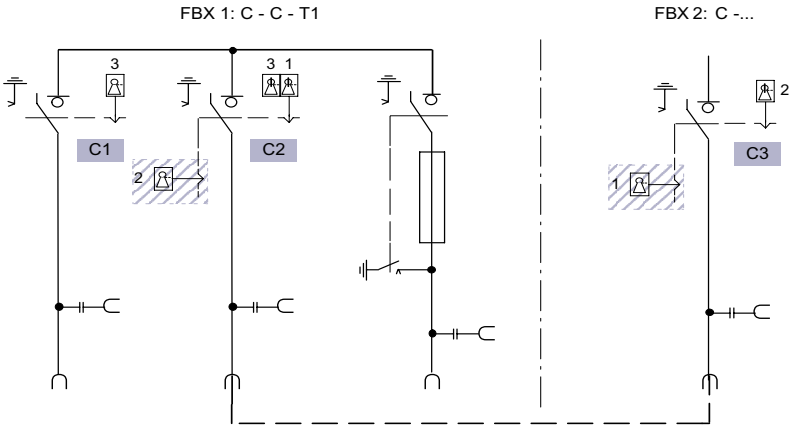
Commissioning	De-energizing	
■ The earthing switches are locked "open" using keys 1 & 2.	■ Open load-break switch C2 and lock with key 2.	■ Close the earthing switch.
■ Keys 1 and 2 should be present in the locks of "open" load-break switches.	■ Recover Key 2.	■ Return to C2.
■ Unlock then close the switches.	■ Go to C1.	■ Introduce Key 1 into the earthing switch lock and unlock immediately.
	■ Open load-break switch and lock with key 1.	■ Verify that there is no voltage across the voltage indicator units.
	■ Recover Key 1.	■ Close the earthing switch.
	■ Introduce Key 2 into the earthing switch lock and unlock it immediately.	
	■ Check that there is no voltage across the voltage indicator units.	



"Operating" interlocks (contd.)

Use of 'ring' interlock between 2 C functions, with connection in parallel forbidden

Commissioning	De-energising the 'ring', with passage of the second "incoming feeder"	
■ The earthing switches C2 & C3 are locked "open" using keys 1 & 2.	■ Open load-break switch C2 and lock with key 1, then key 3.	■ Close the earthing switch.
■ Keys 1 and 2 should be present in the locks of 'open' load-break switches.	■ Recover keys 1 & 3.	■ Return to C2.
■ Lock the load-break switch C1 with key 3.	■ Introduce key 3 into the lock of the load-break switch C1 and unlock it immediately.	■ Introduce Key 2 into the earthing switch lock and unlock immediately.
■ Recover Key 3.	■ Close the load-break switch C1.	■ Verify that there is no voltage across the voltage indicator units.
■ Introduce this key into the second lock of the load-break switch C2 and unlock it immediately.	■ Go to C3.	■ Close the earthing switch.
■ Close the load-break switches C2 & C3.	■ Recover Key 2.	
	■ Introduce Key 1 into the earthing switch lock and unlock it immediately.	
	■ Check that there is no voltage across the voltage indicator units.	



Non-return interlock – HV/LV/Transformer

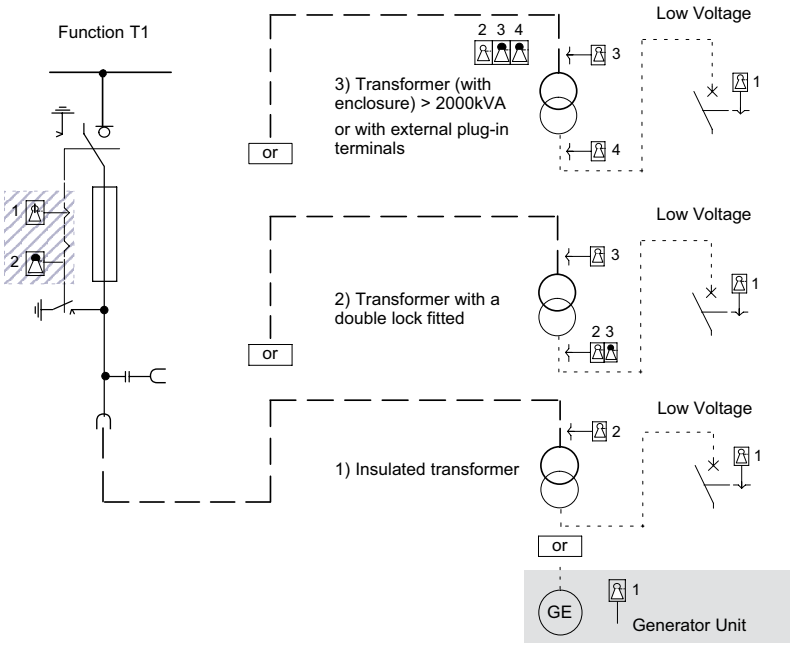
Prohibits access to the Functional Unit's cable compartment and transformer as long as the Functional Unit and the LV circuit breaker are in service (closed).

Applies to Functional Unit's T1 (see page 10) and T2 (see page 10).

"Operating" interlocks (contd.)

Use of HV/LV/Transformer non-return interlocking on a T1 function

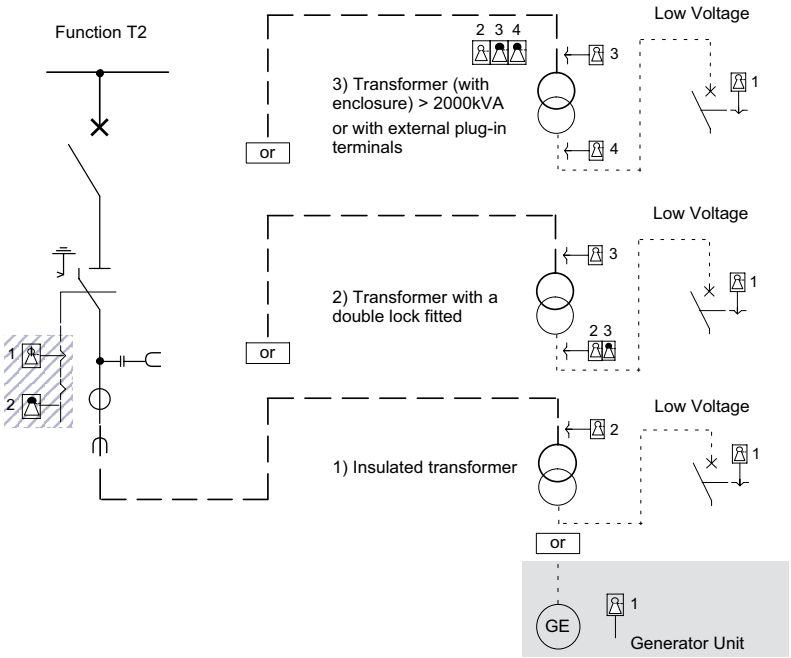
Commissioning	De-energizing	
■ Lock earthing switch "open" using Key 1.	■ Open the load-break switch of function T1.	1st case, insulated transformer:
■ Go to the low voltage switchboard, introduce Key 1 into the CB lock and unlock it immediately.	■ Go to the LV switchboard, open and unplug the main CB.	□ unlock transformer access (or plugin terminals) using Key 2.
■ Plug in then close the LV CB.	■ Lock this CB in its 'withdrawn' position using Key 1.	2nd case, transformer with a double lock fitting:
■ Come back to function T1.	■ Recover key 1 and go back to function T1.	□ introduce key 1 into the transfer lock,
■ Close the load-break switch of the function T1.	■ Introduce Key 1 into the earthing switch lock and unlock it immediately.	□ recover key 3 to gain access to the transformer
	■ Check that there is no voltage across the voltage indicator units.	3rd case, transformer (with metalclad enclosure), > 2000kVA or with external plug-in terminals:
	■ Close the earthing switch.	□ introduce key 2 into the transfer lock,
	■ Lock earthing switch using Key 2.	□ recover key 3 to gain access to the transformer
	■ Go to the transformer.	□ recover key 4 to gain access to the transformer or the plug-in terminals.



"Operating" interlocks (contd.)

Use of HV/LV/Transformer non-return interlocking on a T2 function

Commissioning	De-energizing	
■ Earthing Switch is already locked 'open' with key 1.	■ Trip the circuit breaker.	1st case, insulated transformer:
■ Recover Key 1.	■ Open the line isolator.	□ unlock transformer access (or plugin terminals) using Key 2.
■ Go to the low voltage circuit breaker, introduce Key 1 into the CB lock and unlock it immediately.	■ Go to the LV switchboard, open and unplug the master circuit breaker.	2nd case, transformer with a double lock fitting:
■ Plug in then close the LV circuit breaker.	■ Lock this circuit breaker in its 'withdrawn' position using Key 1.	□ unlock transformer access with key 2,
■ Return to the Functional Unit.	■ Recover key 1 and go back to function T2.	□ recover key 3 to unlock the plug-in terminals.
■ Close the line isolator.	■ Introduce Key 1 into the earthing switch lock and unlock it immediately.	3rd case, transformer (with metalclad enclosure), > 2000kVA or with external plug-in terminals:
■ Re-arm and trip the circuit breaker.	■ Check that there is no voltage across the voltage indicator units.	□ introduce key 2 into the transfer lock,
	■ Close the earthing switch.	□ recover key 3 to gain access to the transformer,
	■ Lock earthing switch using Key 2.	□ recover key 4 to gain access to the transformer or the plug-in terminals.
	■ Go to the transformer.	



Installation of operating interlocks

Ordering key-type interlocks

For all interlock orders, it is necessary to enclose the material characteristics data sheet.

Clearly identify the mechanical control type mechanism before ordering the interlock kit.

Stating:
- The type of lock chosen (Ronis or Profalux),
- The type of interlock.

Spare key supply

On request, Schneider Electric may sometimes supply spare keys to locks.

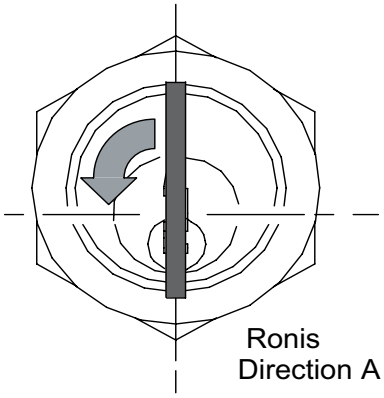
The spare keys must be kept in a dedicated, closed, key safe (not supplied).

Lock and key references

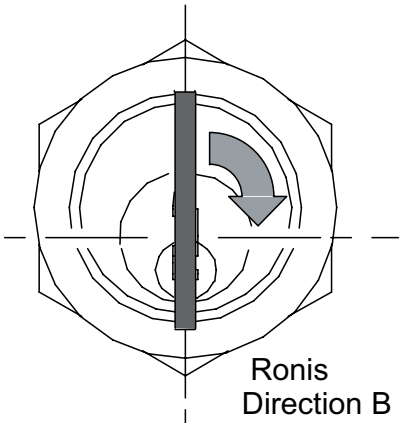
Use	FBX function + Low Voltage (LV)		Transformer (TR)		TR + LV
Description	1/4 turn left	1/4 turn right	door lock	special lock	Deadlocks
Profalux	PBA90GPS3003	PBA90DPS3003	PSP1CPS3000	PSP2FPS3000	PVE11CPS3000
Ronis	RBA90GEL3003	RBA90DEL3003	RSP1CEL3000	RSP2FEL3000	RVE11CEL3000

Use	LV	GE		Wrench
Description	1/4 turn right	key switch	transfer lock	
Profalux	PBA90DPS3333	PVC11CPS3000	PST3PS3000	PCHF5
Ronis	RBA90DEL3333	RVC11CEL3000	RST3EL3000	RCEL5

- Representative of a ¼ turn left to leave the key captive.



- Representative of a ¼ turn right to leave the key captive.



Installation of operating interlocks (contd.)

General installation precautions

Prior to fitting the locks, mark the direction and location on the plate.

Respect the tightening Torques. DO NOT OVER TIGHTEN.

Intervention levels

Definition	Levels
Operations recommended in the instructions manual "installation - operation - maintenance", carried out bysuitably qualified personnel having received training allowing them to intervene whilst respecting the safety rules.	1
Complex operations, requiring specific expertise and the implementation of support equipment in accordance with Schneider Electric procedures. These are carried out by Schneider Electric or by a specialised technician, trained by Schneider Electric in the implementation of procedures, and who is equipped with specific equipment.	2
All preventive and corrective maintenance, all renovation and reconstruction work is carried out by Schneider Electric.	3

Interlocking assemblies using locks (Earthing switch open – load break switch open)

Fitting of locks	Levels		
Functions	**1**	**2**	**3**
Preparation of the locking casing of the earthing switch	-	■	■
Fitting locking operations by keylocks to the earthing switch	-	■	■
Preparation of the locking casing of the load-break switch	-	■	■
Fitting a lock-type interlock on the load-break switch	-	■	■

Preparation of the Functional Unit

Intervention	Duration	Busbar	Cables	Load-break switch	Earthing switch
Normal	1 h	De-energized	De-energized	Open	Open
Possible	1 h	Energized	Energized	Open	Open

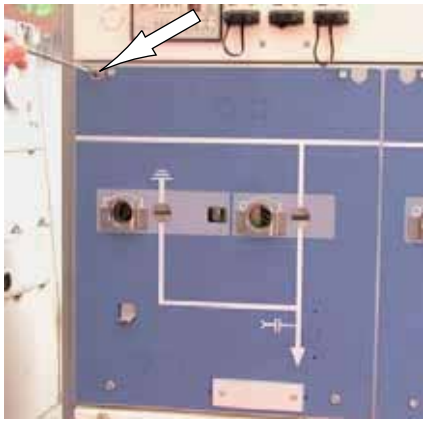
Locking out the Functional Unit
All locking-out operations must be performed according to the particular rules for the network concerned.

Tools required:
Please refer to page 6.

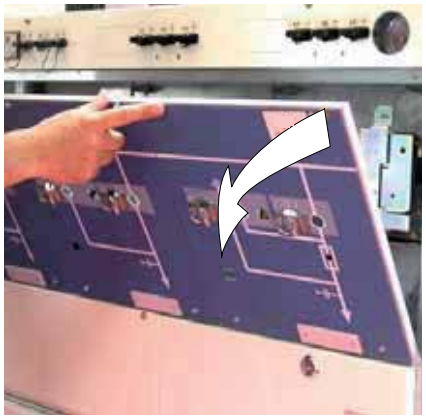
If wiring is present:
- de-energize the LV auxiliary power supplies.
- disconnect all of the wires connected to the control mechanism.

For all interlocking installation operations, it is necessary to remove the FBX front plate.

Installation of operating interlocks (contd.)



- Unscrew the 2 fixing screws of the panel (size 4 Allen key).



- Remove the panel.

Preparation of an earthing switch key-type interlock sub-assembly

Context

In the supply of a key-type interlock kit, this assembly is already done. Therefore, go to page 19 directly.

Nevertheless, in certain cases, (modifications, replacement, etc.), these assemblies may have to be removed and then re-fitted on the site.

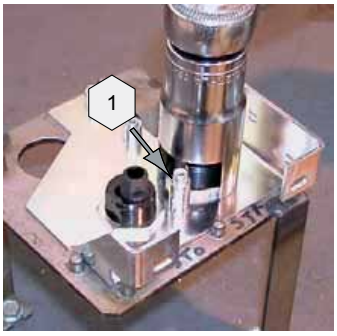
Precautions

For fitting the locks, it is necessary to mark their direction and their location on the plate in accordance with page 7.	Interlocks	1/4 turn left	1/4 turn right
	Earthing switch	Open	Closed

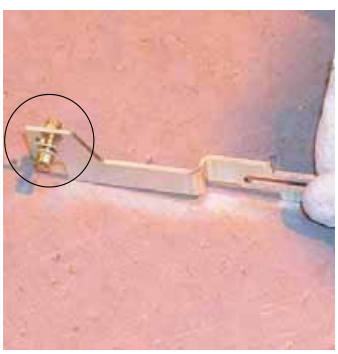
Fitting of two Ronis Nogapi locks

- Insert a ring on to each barrel of the lock.

- Position the barrels on the support.

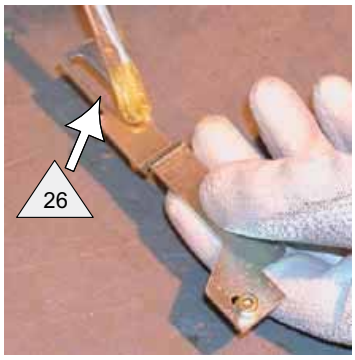


- Fix the barrels on to the support (26 mm spanner).
- Tighten to the indicated torque.

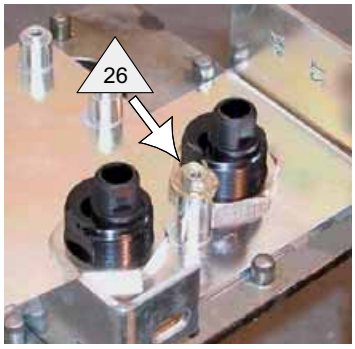


- Fit the probe with a CHC M4x12 bolt + ES4 washer + Nylstop nut.
- Do not tighten this bolt .

Preparation of an earthing switch key-type interlock sub-assembly (contd.)



- Apply grease to the 2 faces of the slide of the probe.



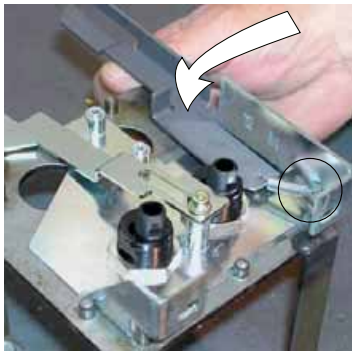
- Place an M6 flat washer on to this stud, with a small deposit of grease.

- Position the probe as shown.

- Fix the probe using a CHC M4x6 bolt + ES4 washer + M4 washer (Allen key size 3).

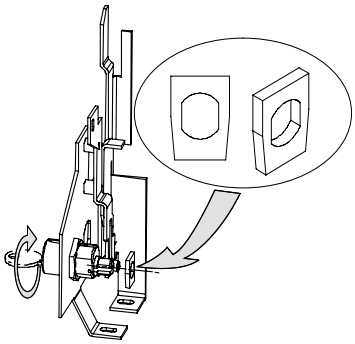
- Hook on the spring to the mobile blanking piece.

Preparation of an earthing switch key-type interlock sub-assembly (contd.)



- Hook on the spring to the support.
- Position the mobile blanking

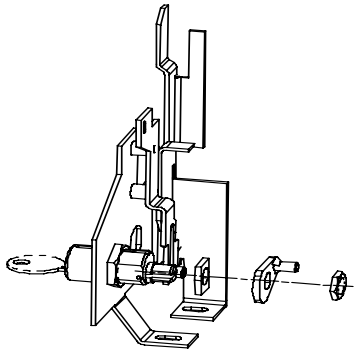
piece as shown. Remain vigilant because in this position, the spring is taut.



- Insert the keys and turn them to place them in a flat position.
- Position the 2 shims: the narrowest part at the bottom.

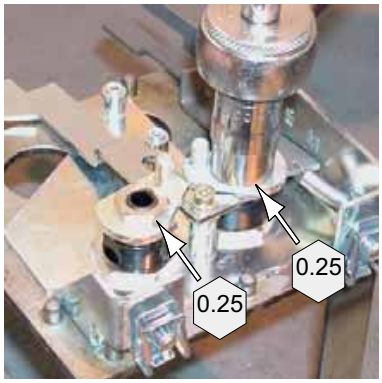
- Position the 2 shims as shown.

- Position the cams as shown

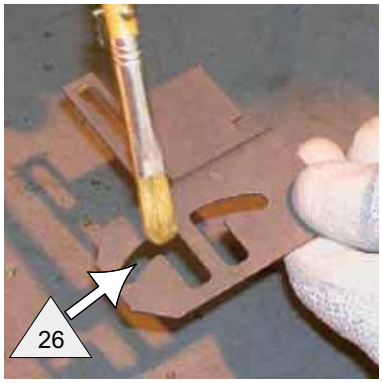


- Screw on the nut positioned at the extremity to maintain all of the equipment on each barrel.

Preparation of an earthing switch key-type interlock sub-assembly (contd.)



- Tighten to the indicated torque. (16mm spanner).



- Apply grease to the 2 faces of all of the slots of the blanking piece.

- Position the blanking piece in its location.
- Fix the blanking piece using 2 CHC M4x6 bolts + ES4 washers + M4 flat washers (Allen key size 3).
- Tighten the 2 screws.

- Position the probe in order to operate either of the keys.
- Make sure that the keys turn easily and that there is no friction.

Fitting an earthing switch key-type interlocking assembly

General

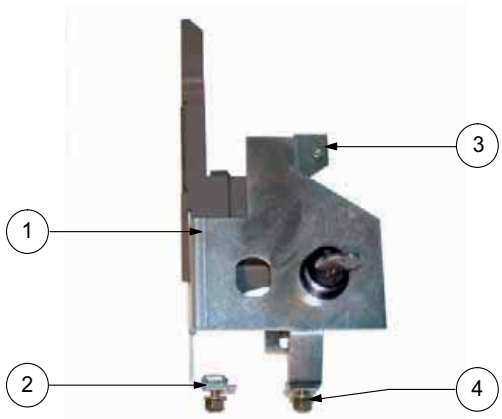
Intervention	Duration	Busbar	Cables	Load-break switch	Earthing switch
Normal	1 h 30	De-energized	De-energized	Open	Closed
Possible	1 h 30	Energized	Energized	Open	Closed

Locking out the Functional Unit
All locking-out operations must be performed according to the particular rules for the network concerned.

Tools required:
please refer to page 6.

Parts required:
interlock kit (see Supply (interlock kit)).

Supply (interlock kit)



Key

1 Locking devices
2 Captive nut (positioned on the support waiting to be assembled on to the FBX cross-member)
3 Assembly bolt not tightened
4 Fixing bolt

Identification and locking out of the Functional Unit to be equipped with an interlocking device

On the table, identify the position of the Functional Unit to be equipped (1, 2, 3 or 4).
See lock out instructions in page 13.
If necessary lock out the load-break switches and earthing switches.

Fitting of an earthing switch key-type interlock assembly to a C function

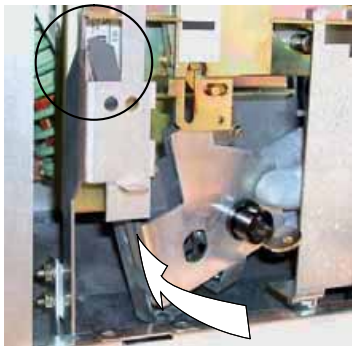
- The interlocking device is equipped with (see page 15).

- Remove the front panel (Allen key size 4).
- Mark the position of the interlocking device.

Fitting an earthing switch key-type interlocking assembly

(contd.)

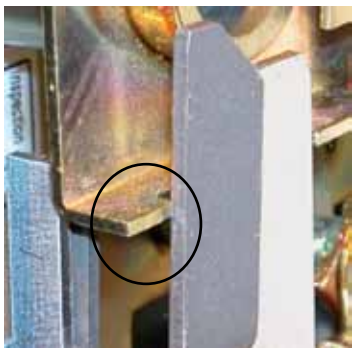
■ Recover the 2 captive nuts and slide them on to the 2 holes of the front cross member.



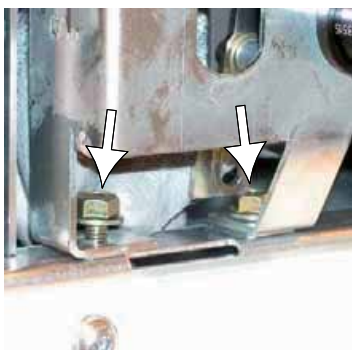
■ Insert the entire device through the inside of the compartment.

If necessary remove the locking devices of the panel in accordance with page 29

■ Position vertically the device on to its 2 fixing points.



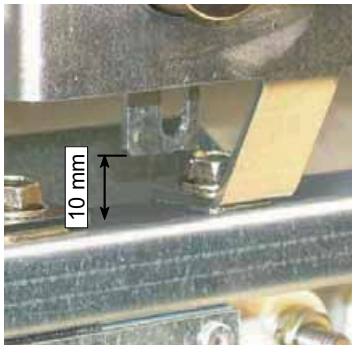
■ Check that the mobile blanking piece is in its housing.



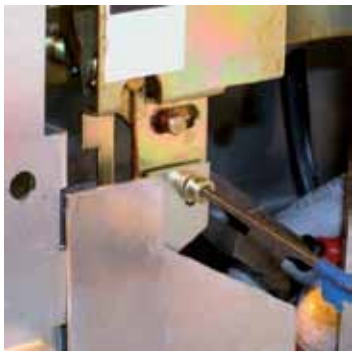
■ Align and fix the device using the 2 screws, without tightening them.

Fitting an earthing switch key-type interlocking assembly

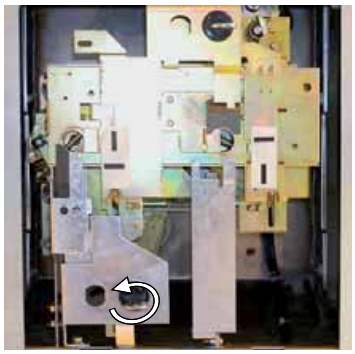
(contd.)



- Functions C & T1: position a shim under the probe in order to obtain the 10 mm dimension.
- Function T2: no shim.



- Assemble the probe and the earthing switch position indicator with the bolt supplied (Allen key size 3 + 7 mm open-ended spanner).



- Check that the key turns easily, without blocking in the barrel of the lock.

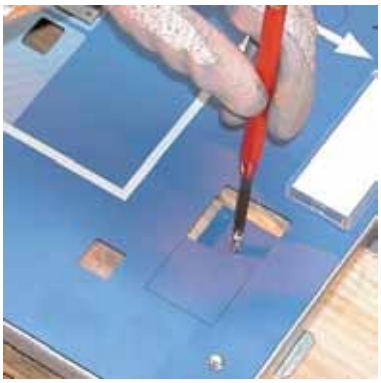
- Displace the assembly laterally and in depth to obtain the correct operation.
- Tighten the 2 fixing screws.

Preparation of the front plate

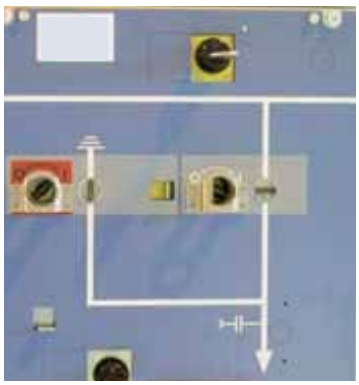
- Mark the cut-out to be removed from the plate.

Fitting an earthing switch key-type interlocking assembly

(contd.)



- Using a hammer and a large pin punch, remove the cut-out.
- If necessary, slightly file down the parts which are not completely flat and smooth.



- Re-fit the front plate on to the Functional Unit C (Allen key size 4).

Operating tests

Proceed with operating mechanical tests of the interlocking device.

Preparation of a load-break switch key-type interlock sub-assembly

Context

With the supply of a key-type interlock kit, this assembly is already done. Therefore, go to chapter 9 directly.

Nevertheless, in certain cases, (modifications, replacement, etc.), these assemblies may have to be removed and then re-fitted on the site.

Precautions

For fitting the locks, it is necessary to mark their direction and their location on the plate in accordance with page 7.	Locking	1/4 turn left
	Load-break switch	Open

Fitting a Profalux Nogapi lock

Fitting a barrel on to the support

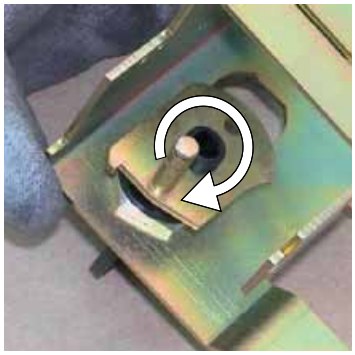
- Insert a ring on to the barrel of the lock.

- Position the barrel on to the support, as shown.

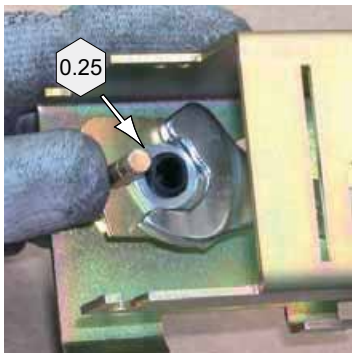
- Tighten the nut (26 mm spanner).

- Position the cam.

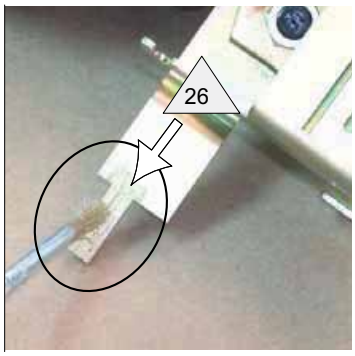
Preparation of a load-break switch key-type interlock sub-assembly (contd.)



- Introduce the key and turn it to place it in a flat position.

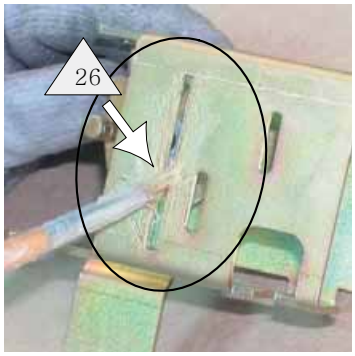


- Screw in and tighten the nut to the indicated torque whilst maintaining the barrel of the lock (key 40 R.16).

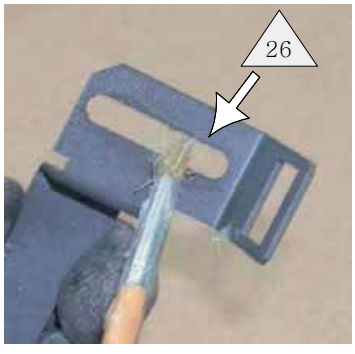


Equipment for the support

- Grease the part above and underneath the vertical lug of the support.

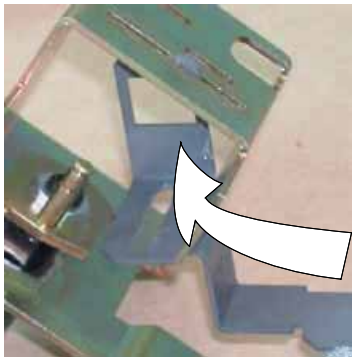


- Grease the passage slot of the blanking off piece.

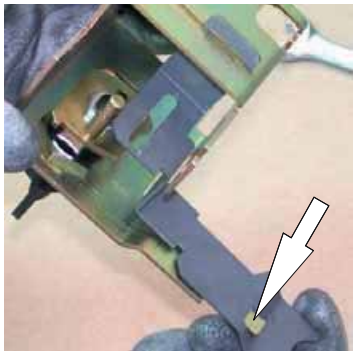


- Grease the 2 sides of the blanking off piece.

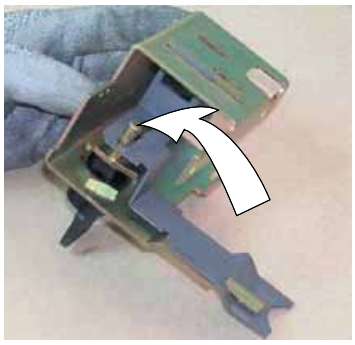
Preparation of a load-break switch key-type interlock sub-assembly (contd.)



- Insert the blanking off piece intothe slot of the support.

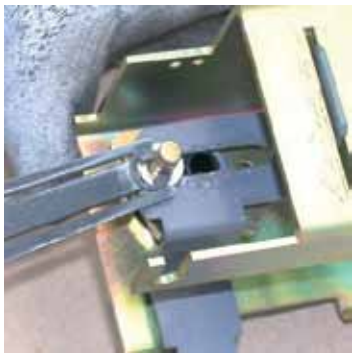


- At the same time, the lug of the suppport must go in to the notch of the blanking off piece.



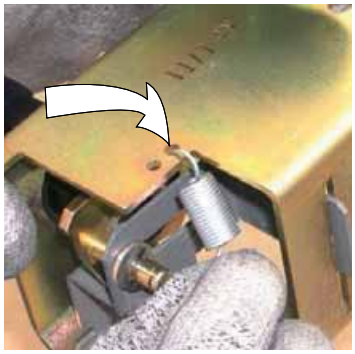
- Maintain the blanking off piece raised whilst moving it on to its drive pin.

- Fit a flat washer.



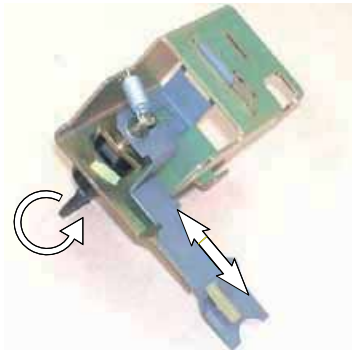
- Fit the circlips.

Preparation of a load-break switch key-type interlock sub-assembly (contd.)



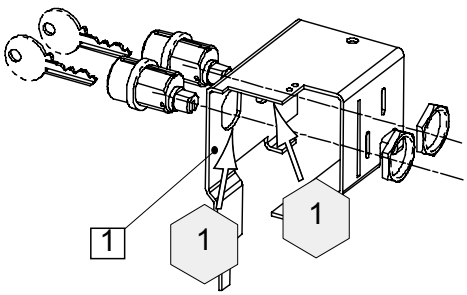
- Hook on the spring in to the indicated hole, at the rear of the support.

- Hook the other extremity of the spring on to the drive pin.

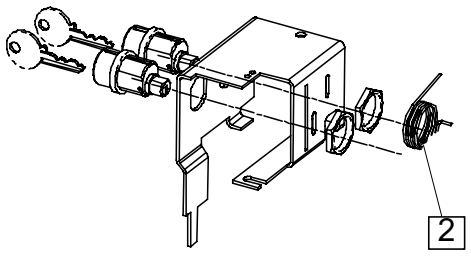


- Check that the device is functioning properly whilst operating the key several times.

Assembly of two Ronis Nogapi locks

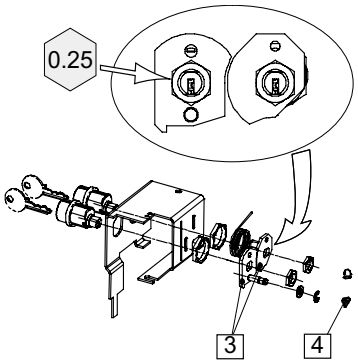


- Directly fix the barrels on to the locks of the support (1).
- Tighten the nuts (26 mm spanner).



- Place the spring (2).

Preparation of a load-break switch key-type interlock sub-assembly (contd.)

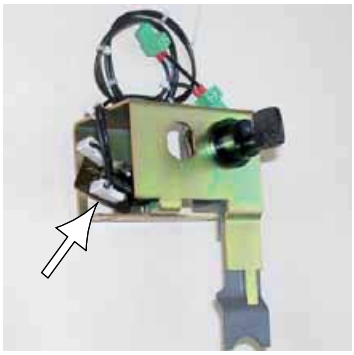


- Position the 2 cams (3) as shown above.
- Tighten the nuts (key 40 R.16).
- Position the spring (4).

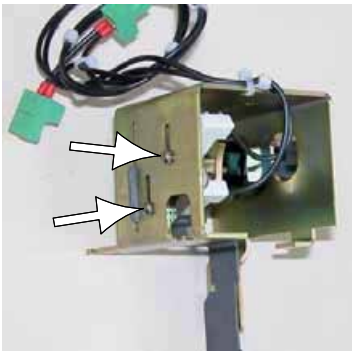
Equipment for the support

Proceed in exactly the same way as for chapter "Equipment for the support" in page 23.

Locks with micro-switches



- The micro-switch is fixed on to the rear side of the device.



- The micro-switch is held in place by 2 screws moderately tightened.

- The wiring loom is connected up by two elbowbend lugs.

Fitting a load-break switch key-type interlocking assembly

General

Intervention	Duration	Busbar	Cables	Load-break switch	Earthing switch
Normal	1 h 30	De-energized	De-energized	Open	Closed
Possible	1 h 30	Energized	De-energized	Open	Closed

Locking out the Functional Unit
All locking-out operations must be performed according to the particular rules for the network concerned.

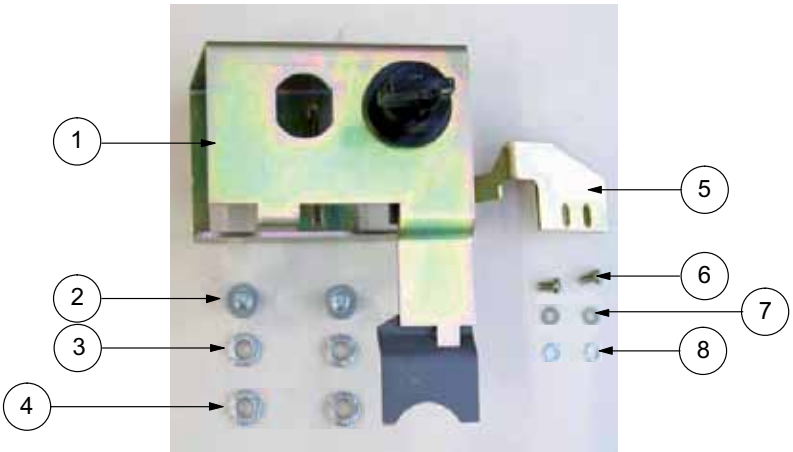
Tools required:
please refer to page 6.

Parts required:
- interlock kit (see page 28),
- shim.

Supply (interlock kit)

Key

1 Fitted support
2 Bolts
3 Self-locking washer
4 Additional self-locking washer for T1
5 End stop
6 Self-tapping screws
7 Self-locking washer
8 Flat washer

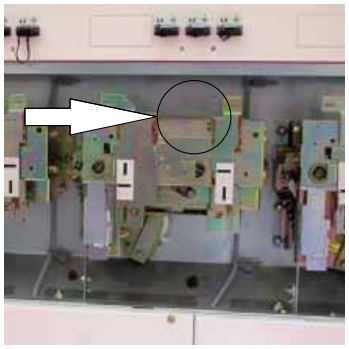


Identification and locking out of the Functional Unit to be equipped with an interlocking device

On the switchboard, identify the position of the function to be equipped (1, 2, 3 or 4).
See lock out instructions in page 13.
If necessary, lock out the load-break switches and earthing switches.

Fitting a load-break switch key-type interlocking assembly

(contd.)

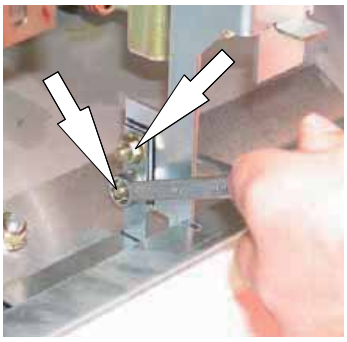


Location of the assembly

- The mechanical control mechanism is accessible.
- The locking operation by keylocks will be fitted in the upper part.

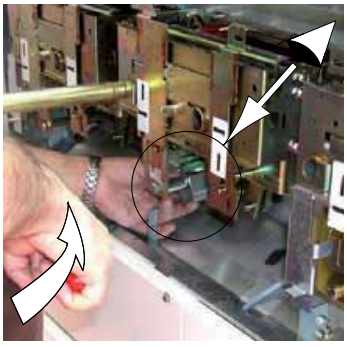
Removal of the interlocking device

- Using a marker, mark out the position of the vertical locking device on its support.



- Unscrew and remove the 2 fixing bolts (2 open-ended spanners size 10).

- Extract the vertical locking device.



Extraction of the mechanical control mechanism

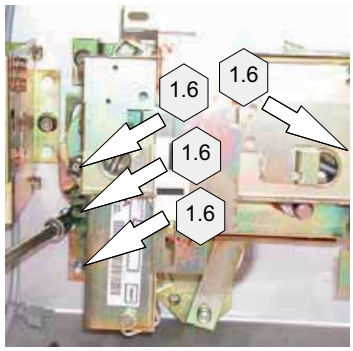
- Insert the earthing switch lever.
- Operate the earthing switch very slowly so that its blades are lifted.

Fitting a load-break switch key-type interlocking assembly

(contd.)

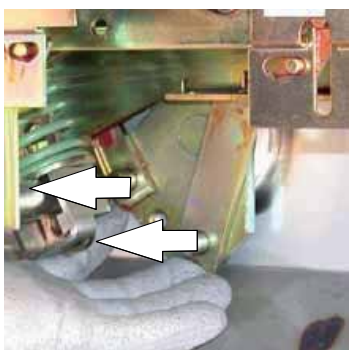
- Position the shim on the lower rear side of the spring.
- Leave the earthing switch to rest again on this shim.

- The shim is in place.
- Remove the operating lever for the earthing switch.



- Unscrew the 4 self-locking fixing nuts (3 to the left, 1 to the right) of the control mechanism.

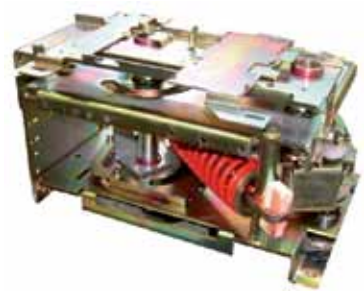
- Use gloves to take hold of the control mechanism.



- Extract the control mechanism whilst pulling the 2 drive rods in the lower part.

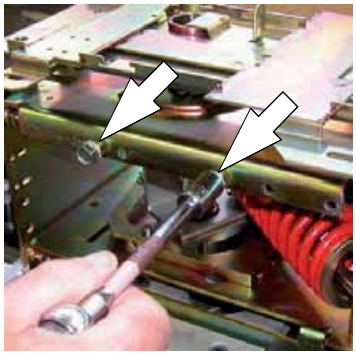
Fitting a load-break switch key-type interlocking assembly

(contd.)



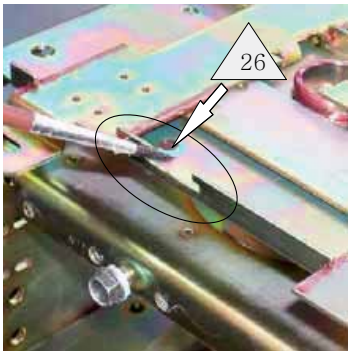
Installation of the interlocking device of the load-break switch (for the marks, see page 28)

- Place the mechanical control mechanism in a flat position.



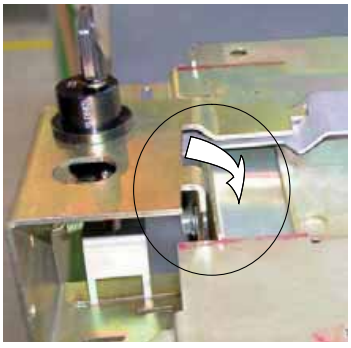
- Screw in the 2 screws by two threads (2) with 1 washer each (3).

Place 2 washers under each screw for a functional interlocking T1.



- Grease the passage of the support.

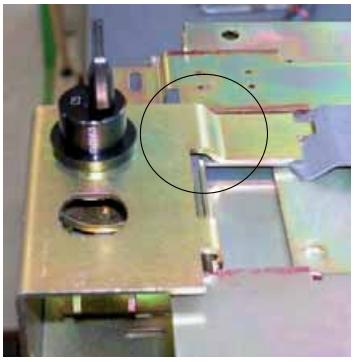
- First of all, insert the support (1) on to the 2 bolts, between the washers and the plate of the mechanical control mechanism.



- Then secondly, hook the small lug on at the front of the support, behind the back of the plate.

Fitting a load-break switch key-type interlocking assembly

(contd.)



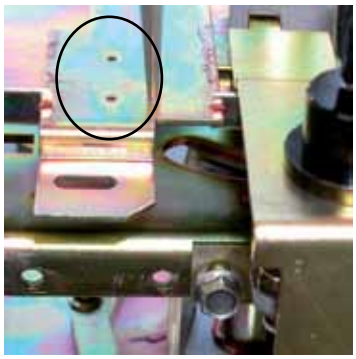
- Then centre the support in the passage slot, which has been previously greased.
- Align the support in relation to the edge of the mechanical control mechanism.

- Check the free functioning of the interlocking device. The key must go back to the original position.

- Tighten the 2 fixing screws of the support, whilst checking the free functioning of the interlocking device.

- Re-fit the mechanical control mechanism on to the FBX, whilst poceeding in reverse order as for dismantling (see page 29).

Replace the 4 self-locking nuts by new ones. Tighten to the indicated torque.



Fitting the interlocking device end stop (for the marks, see page 28)

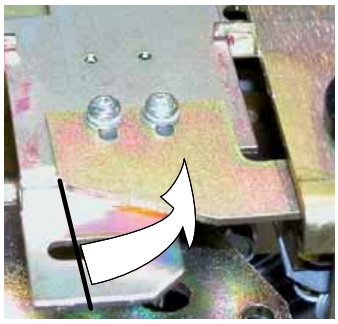
- Very lightly bore the 2 holes of the fixing screws.

- Place the end stop (5). Screw in the 2 screws (6) (+ washers 7 and 8) without tightening (Torx 2,5 screwdriver).

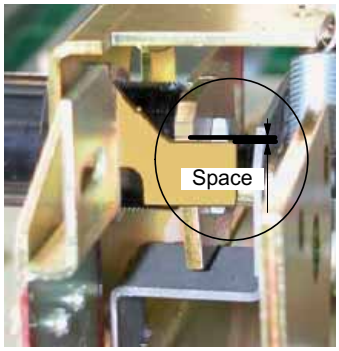
It is necessary to close the load-break switch to adjust the end stop. Caution, the busbar may be energised !

Fitting a load-break switch key-type interlocking assembly

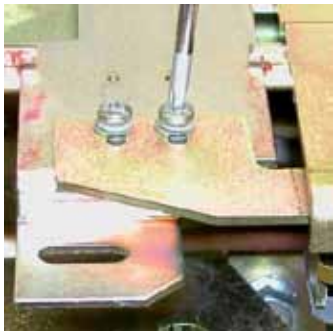
(contd.)



- Slightly incline the end stop to avoid it leaving the cam when in operation.



- Keep a space of 1.5 to 2mm between the end stop and the cam. This space avoids any risk of shock during the operations.



- Moderately tighten the 2 screws.

Preparation of the front plate

- Remove the corresponding cap of the lock.
- If necessary, slightly file down the parts which are not completely flat and smooth.

- Replace the plate.

Mechanical operation tests

Proceed with mechanical operating mechanical tests of the interlocking device.

Notes

Notes

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